CLAIMS:

What is claimed is:

1. A trap for use with energy conversion devices comprising:

a trapping system comprising a filter element and a trap element;

a reforming system; and

wherein said reforming system is fluidly coupled to said trapping system, with said trapping system positioned after said reforming system.

2. The trap of Claim 1, further comprising a temperature sensor in electrical communication with said trapping system.

3. The trap of Claim 1, further comprising a pressure differential sensor is coupled to said trapping system.

4. The trap of Claim 1, further comprising a reformate control valve is coupled to said trapping system.

5. The trap of Claim 4, wherein said reformate control valve is coupled to a solid oxide fuel cell.

6. The trap of Claim 4, wherein said reformate control valve is coupled to a waste energy recovery burner device.

7. The trap of Claim 1, further comprising a solid oxide fuel cell coupled to a reformate control valve, wherein said reformate control valve is coupled to said trapping system.

8. The trap of Claim 1, further comprising a waste energy recovery burner device coupled to a reformate control valve, wherein said reformate control valve is coupled to said trapping system.

9. The trap of Claim 1, wherein said filter element further comprises a particulate filter disposed in a first chamber of said trapping system.

10. The trap of Claim 9, wherein said particulate filter further comprises a material having a sufficient porosity to permit passage of reformate, and filter and remove a particulate matter from a reformate

11. The trap of Claim 9, wherein said particulate filter further comprises a filter material selected from the group consisting of ceramic, metallic, cermet, carbides, silicides, nitrides, composites, and combinations comprising at least one of the foregoing materials.

12. The trap of Claim 9 wherein said particulate filter further comprises a catalyst disposed on a filter material.

13. The trap of Claim 12, wherein said catalyst further comprises a catalyst material selected from the group consisting of platinum, palladium, rhodium, nickel, iron, cobalt, molybdenum, tungsten, vanadium, niobium, tantalum, their oxides and sulfides, and combinations comprising at least one of the foregoing catalyst materials.

14. The trap of Claim 9, wherein said particulate filter further comprises a washcoat disposed on a filter material.

15. The trap of Claim 14, wherein said washcoat further comprises a washcoat material selected from the group consisting of aluminum oxide, silicon oxide, zirconium oxide, titanium oxide, cerium oxide, and combinations comprising at least one of the foregoing washcoat materials.

16. The trap of Claim 1, wherein said trap element further comprises a sulfur adsorber material selected from the group consisting of nickel, iron, zinc, copper, molybdenum, manganese, vanadium, niobium, cobalt, their alloys and oxides, and combinations comprising at least one of the foregoing sulfur adsorber materials.

17. The trap of Claim 1, wherein said trap element further comprises a sulfur adsorber material selected from the group consisting of carbonates zeolitic matter, non-zeolitic matter, and combinations comprising at least one of the foregoing sulfur adsorber materials, wherein said non-zeolitic matter is selected from the group consisting of phosphates, molybdates, alumina containing equivalents, and combinations comprising at least one of the foregoing non-zeolitic matter.

18. The trap of Claim 1, wherein said trap element further comprises a sulfur adsorber material selected from the group consisting of sodalites, scapolites, cancrinite structure type alumino-silicates, and combinations comprising at least one of the foregoing sulfur adsorber materials.

19. The trap of Claim 1, wherein said trapping system further comprises a first chamber and a second chamber, wherein said first chamber further comprises said filter element, wherein said second chamber further comprises said trap element.

20. A method for trapping particulate matter and sulfur in an energy conversion device, comprising:

dispensing a fuel into the energy conversion device;

processing said fuel in a reformer system to produce a reformate;

coupling said reformer to a trapping system;

filtering said reformate using said trapping system; and

regenerating said trapping system.

21. The method of Claim 20, wherein said processing said fuel is via an exothermic reaction.

22. The method of Claim 20, wherein said processing said fuel is via catalytic oxidation.

23. The method of Claim 20, further comprising fluidly coupling a reformate control valve to said trapping system.

24. The method of Claim 23, further comprising fluidly coupling a solid oxide fuel cell to said reformate control valve.

25. The method of Claim 23, further comprising fluidly coupling a waste energy recovery burner to said reformate control valve.

26. The method of Claim 20, further comprising fluidly coupling a temperature sensor to said trapping system.

27. The method of Claim 20, further comprising fluidly coupling a pressure differential sensor to said trapping system.

28. The method of Claim 20, further comprising fluidly coupling a waste energy burner device to a solid oxide fuel cell, wherein said solid oxide fuel cell is fluid coupled to a reformate control valve, wherein said reformate control valve is fluidly coupled to said trapping system.

29. The method of Claim 20, further comprising monitoring said trapping system using a temperature sensor.

30. The method of Claim 20, further comprising monitoring said trapping system using a pressure differential sensor.

31. The method of Claim 20, further comprising monitoring said trapping system using an on-board diagnostic system.

32. The method of Claim 20, further comprising monitoring said trapping system using a device selected from the group consisting of an on-board diagnostic system, temperature sensor, pressure differential sensor, and combinations comprising at least one of the foregoing devices.

33. The method of Claim 20, wherein said regenerating further comprises elevating an operating temperature of said energy recovery device to trigger regeneration of said trapping system.

34. The method of Claim 33, wherein said elevating said operating temperature further comprises diverting a reformate flow to a waste energy recovery burner system using a reformate control valve, wherein said waste energy recovery burner system burns said reformate to elevate said operating temperature of said energy recovery device.

35. The method of Claim 34, wherein said elevating said operating temperature further comprises heating a reformate flow in a reformer using a heating element or a heating device.

36. The method of Claim 20, wherein said regenerating further comprises introducing an oxidizing reformate mixture into said energy conversion device to trigger regeneration of said trapping system.

37. The method of Claim 20, wherein said regenerating further comprises introducing a reducing reformate mixture into said energy conversion device to trigger regeneration of said trapping system.